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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,169	06/26/2003	Thomas J. McIntyre	BA-00577	8244
22500	7590	03/28/2008		
BAE SYSTEMS PO BOX 868 NASHUA, NH 03061-0868			EXAMINER LAVARIAS, ARNEL C	
			ART UNIT 2872	PAPER NUMBER
			MAIL DATE 03/28/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/608,169	Applicant(s) MCINTYRE ET AL.	
	Examiner Arnel C. Lavarias	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/27/07, 3/10/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. In view of the decision on appeal dated 9/27/07, the finality of the last Office action dated 5/27/05 is withdrawn.
2. Claims 1-23 are now rejected as follows.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. *It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.*

4. The abstract of the disclosure is objected to because of the following informalities:

Abstract, line 3-4- delete 'is disclosed'.

Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 14-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14 is a method claim drawn to a process of manufacturing an integrated photonic circuit. The first step comprises etching a photonic resonator onto a substrate. The second step comprises patterning a sensor element onto the substrate. It is not clear where the patterning of the sensor element occurs; in other words it is not clear whether the sensor is patterned at the same cross section plane intersecting the substrate, as with the resonator, or away from the resonator. It is noted that Fig. 1 is only a sketchy depiction of the circuit and does not provide cross section information about the spatial relation between the various components. Because of the above reasons, a meaningful prior art search cannot be undertaken. Claims 15-23 are dependent on Claim 14, and hence inherit the deficiencies of Claim 14.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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8. Claims 1-3, 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Huber (U.S. Patent No. 5159601), of record.

Regarding Claims 1, 3, 6, Huber discloses a photonic circuit (Fig. 1) comprising a resonator in the form of grating 18, which is part of a tunable fiber laser, means for heating the resonator in the form of resistive heater 24, means for measuring a temperature of the grating in the form of thermistor 26, means for coupling the thermistor to the heater in the form of circuit 28, wherein the thermistor measures the temperature of the grating and transmits signals to the voltage source 30, in order to increase or decrease the amount of heat provided to the heater, so that the grating period is adjusted accordingly, for changing the wavelength of the light being passed through the grating and out of the laser cavity (line 43, col. 2 to line 10, col. 3). It is noted that in order for the system to associate a measured temperature with a desired temperature (which would cause the laser to emit the desired wavelength), it is inherent that some kind of logic is used (e.g., in the simplest form whether a measured temperature is equal or not to a set temperature).

Regarding Claim 2, grating 118, heater 24 and thermistor 26 are embedded in substrate 22 (lines 52-58, col. 2).

9. Claims 1, 3-4, 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Ueda (U.S. Patent No. 6498878), of record.

Regarding Claims 1, 3, 6, Ueda discloses a photonic circuit (Figs. 2-3) comprising a resonator in the form of arrayed waveguide grating 14, which is part of a WDM multiplexing/demultiplexing integrated optical circuit, means for heating the resonator in

the form of thin film heater 22, means for measuring a temperature of the grating in the form of temperature detector 25, means for coupling the thermistor to the heater in the form of a feedback circuit (not shown), wherein the temperature detector measures the temperature of the arrayed grating and transmits signals to a current source, in order to increase or decrease the amount of heat provided to the heater, so that the difference between adjacent waveguides is adjusted accordingly, for changing the routes of wavelengths of the light being passed through the arrayed grating (line 23, col. 4 to line 41, col. 4). It is noted that in order for the system to associate a measured temperature with a desired temperature (which would cause the arrayed grating to perform the multiplexing/demultiplexing according to a designed protocol), it is inherent that some kind of logic is used (e.g., in the simplest form whether a measured temperature is equal or not to a set temperature).

Regarding Claim 4, the circuit is used for photonic switching, i.e., for switching wavelengths between the various input and output channels.

10. Claims 1, 3, 6-8, 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Eggleton et al. (U.S. Patent No. 6438277), of record.

Regarding Claims 1, 3, 6-7, Eggleton et al. discloses a photonic circuit (Fig. 1) comprising a resonator in the form of a thermally sensitive optical element 11 which may be a grating, a resonance ring or a solid body resonance cavity, which is part of a waveguide circuit 10, means for heating the resonator in the form of heater 12, means for measuring a temperature of the resonator 11 in the form of temperature-dependent resistive element (not shown), means for coupling the temperature sensor to the heater in

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the form of a feedback circuit 14 wherein the temperature detector measures the temperature of the resonator and transmits signals to a current source, in order to increase or decrease the amount of heat provided to the heater, so that the temperature sensitive resonator changes its wavelength response (line 64, col. 2 to line 37, col. 3). It is noted that in order for the system to associate a measured temperature with a desired temperature (which would cause the grating to transmit or reflect the desired wavelength), it is inherent that some kind of logic is used (e.g., in the simplest form whether a measured temperature is equal or not to a set temperature).

Regarding Claims 8, 10-11, the change in the temperature is measured by measuring the resistance of wire 12, using a resistance detector 16, an ohmmeter, which in effect calculates the resistance by taking the values of a voltage and a current across the line (lines 5-11, col. 3).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huber in view of Koizumi et al. (U.S. Patent No. 5696543), of record.

Huber discloses all the limitations of the above claims except for specifying that the metal wire of the temperature sensor is aluminum. Koizumi et al. discloses a temperature

sensor device wherein an aluminum wire is used as temperature sensor element 6 (Fig. 1, lines 44-56, col. 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an aluminum wire as a simple temperature sensor, as taught by Koizumi et al., since aluminum has very good thermal properties in terms of its thermal coefficient.

13. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eggleton et al. in view of Koizumi et al.

Eggleton et al. discloses all the limitations of the above claims except for specifying that the metal wire of the temperature sensor is aluminum. Koizumi et al. discloses a temperature sensor device wherein an aluminum wire is used as temperature sensor element 6 (Fig. 1, lines 44-56, col. 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an aluminum wire as a simple temperature sensor, as taught by Koizumi et al., since aluminum has very good thermal properties in terms of its thermal coefficient.

14. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eggleton et al. in view of Schwindt et al. (U.S. Patent No. 6720782), of record.

Eggleton et al. discloses all the limitations of the above claim except for specifying that during the measurement of the resistance of the wire, the value of voltage is taken by using a voltmeter connected to the wire via a Kelvin connection. Schwindt et al. discloses a measurement probe used in conjunction with low-current and low-voltage measurements of wafers and other electronic test devices, wherein Schwindt et al. teaches that a voltmeter may be connected to an interconnection point which comprises a Kelvin

connection (lines 26-65, col. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to connect the voltmeter to the wire via a Kelvin connection in the device of Eggleton et al., as taught by Schwindt et al., since Kelvin connections compensate for voltage losses caused by line resistances which would otherwise cause errors in low-voltage measurements (lines 52-54, col. 1 in Schwindt et al.).

15. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eggleton et al. in view of Sorin et al. (U.S. Patent No. 5982791).

Eggleton et al. discloses the invention as set forth above in Claim 7, except for the measure of temperature being used as a key into a lookup table, said lookup table comprising different frequencies selected by said resonator at different temperatures. However, the use of lookup tables to correlate one parameter to another is well known and conventional in the art. For example, Sorin et al. teaches a conventional optical system utilizing a series of fiber Bragg gratings for WDM applications (See for example Abstract; Figures 3, 6-12). In addition, Sorin et al. teaches that the operating wavelength of the fiber Bragg gratings may be adjusted by a controller (See for example 104 in Figure 7) by use of a lookup table that includes wavelength vs. temperature information for the Bragg grating (See col. 8, line 44-col. 9, line 22). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the measure of temperature be used as a key into a lookup table, said lookup table comprising different frequencies selected by said resonator at different temperatures, as

taught by Sorin et al., in the process of Eggleton et al., for the purpose of providing fast, dynamic feedback and tuning of the fiber Bragg grating.

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 571-272-2315. The examiner can normally be reached on M-F 10:00 AM - 6:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Arnel C. Lavarias
Primary Examiner
Group Art Unit 2872
3/25/08

/Arnel C. Lavarias/
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approved
[Signature]